

What is claimed is:

- 5 *Sub B1*
1. A liquid dispensation device, comprising
- a. a pin element ²⁸ moveably oriented to move between a retracted position and an extended position; and *cl. 4, lines 48-49* ✓
- b. a drive element ³⁸ operatively coupled with the pin element, wherein the drive element is operating the pin element.

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2. The device of claim 1 wherein the drive element is magnetically coupled with the pin element. ✓

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3. The device of claim 1 further comprising an encasement defining a chamber ¹² and an orifice communicating with the chamber, wherein the pin element is slideably received within the chamber, the pin element moving between the retracted position and the extended position, the extended position describing a portion of the pin element extending out of the chamber through the orifice. *(14, 20)*

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4. The device of claim 1 wherein the drive element is a magnet. ✓

5. The device of claim 4 wherein the magnet is a rare earth magnet.

6. The device of claim 5 wherein the rare earth magnet is SmCo.

7. The device of claim 5 wherein the rare earth magnet is NdFeB.

8. The device of claim 5 wherein the drive element is selectively moveable by fluid pressure.

9. The device of claim 8 further comprising a second drive element, the second drive element being a magnet.

10. The device of claim 1 wherein the drive element is an electromagnet.

11. The device of claim 1 further comprising a driven element in contact with the pin element, the driven element being magnetically coupled with the drive element, wherein the drive element is oriented to magnetically move the driven element.

12. A liquid dispensation device, comprising

- a. a contact element²² moveably oriented to move between a retracted position and an extended position; and
- b. a drive element²⁴ operatively coupled with the contact element, wherein the drive element is operating the contact element into contact with a substrate.

13. The device of claim 12 wherein the drive element is magnetically coupled with the contact element.

14. The device of claim 12 further comprising an encasement defining a chamber and an orifice communicating with the chamber, wherein the contact element is slideably received within the chamber, the contact element moving between the retracted position and the extended position, the extended position describing a portion of the contact element extending out of the chamber through the orifice.

15. The device of claim 13 wherein the drive element is a magnet.

16. The device of claim 15 wherein the drive element is selectively moveable by fluid pressure.

17. The device of claim 16 further comprising a second drive element, the second drive element being a magnet.

18. The device of claim 12 wherein the drive element is an electromagnet.

19. The device of claim 12 further comprising a driven element in contact with the contact element, the driven element being magnetically coupled with the drive element, wherein the drive element is oriented to magnetically move the driven element.

20. A liquid dispensation device, comprising

- a. a nozzle defining a chamber and a dispensation orifice communicating with the chamber;
- b. a transfer pin having a contact end, the transfer pin moveably received within the chamber and moveable between a retracted position and a dispensing position in which a portion of the contact end extends out of the chamber through the dispensation orifice; and
- c. a drive element magnetically coupled with the transfer pin, wherein the drive element is oriented to magnetically move the transfer pin.

21. The device of claim 20 wherein the drive element is a magnet.

22. The device of claim 21 wherein the drive element is selectively moveable by fluid pressure. ①

23. The device of claim 22 further comprising a second drive element, the second drive element being a selectively moveable magnet. ①

24. The device of claim 20 wherein the drive element is an electromagnet.

25. The device of claim 20 further comprising a driven element in contact with the transfer pin, the driven element being magnetically coupled with the drive element, wherein the drive element is oriented to magnetically move the driven element.

26. The device of claim 20, further comprising a liquid receiving opening in the nozzle, the liquid receiving opening being in fluid communication with the chamber.

27. The device of claim 26 wherein the liquid receiving opening is opposite the dispensation orifice.

28. The device of claim 20 wherein the transfer pin in the dispensing position disengagingly contacts the target substrate.

29. The device of claim 20 wherein the transfer pin motion is hydraulically restrained by the liquid in the chamber.

30. The device of claim 20 wherein the transfer pin inhibits any inadvertent escape of the liquid from the dispensation orifice.

31. A dispensation device, comprising

- a. a nozzle defining a chamber and a dispensation orifice communicating with the chamber;
- b. a transfer pin having a contact end, the transfer pin moveably received within the chamber and moveable between a retracted position and a dispensing position in which a portion of the contact end extends out of the chamber through the dispensation orifice;
- c. a driven element in contact with the transfer pin; and

- d. a drive element magnetically coupled with the driven element, the drive element oriented to magnetically move the driven element, whereby the drive element magnetically positions the transfer pin.

5 32. The device of claim 31, further comprising a second drive element acting concurrently with the drive element, the second drive element magnetically coupled with the driven element, the second drive element being oriented to magnetically move the driven element, whereby the second drive element magnetically positions the transfer pin.

10 33. The device of claim 31 wherein the drive element magnetically defines a positional limit for the retracted position and the dispensing position of the transfer pin.

15 34. The device of claim 33 wherein the drive element magnetically controls a contact force for the transfer pin with a target substrate.

 35. The device of claim 34 wherein the drive element magnetically biases the transfer pin in a direction parallel to the direction of any movement of the drive element.

20 36. The device of claim 31 wherein the drive element is selectively positioned by fluid pressure against an opposing spring tension, the fluid pressure increasing to bias the drive element toward the dispensation orifice, the drive element being biased away from the dispensation orifice by a decrease in the fluid pressure.

37. A method of dispensing liquid, comprising the steps of
- a. directing a quantity of liquid into a chamber defined by a nozzle, the chamber being in fluid communication with a dispensation orifice;
 - b. moving a transfer pin toward a substrate through the chamber, whereby the transfer pin carries an amount of liquid from the chamber to the substrate.

38. The method of claim 37, further comprising the step of retracting the transfer pin to a retracted position in the chamber.

39. The method of claim 37 wherein the step of moving the transfer pin further includes magnetically moving the transfer pin.

40. The method of claim 37 wherein the step of moving the transfer pin further includes selectively moving the transfer pin by fluid pressure.

41. The method of claim 37 wherein the transfer pin disengagingly contacts the substrate.

42. The method of claim 37 wherein the transfer pin motion is hydraulically restrained by the liquid in the chamber.

method of dispensing liquid, comprising the steps of:
directing a quantity of liquid into a chamber;
the chamber being in fluid communication with a substrate;
magnetically moving a transfer pin through the liquid
with a substrate, whereby the transfer pin picks up the liquid
the chamber to the substrate.

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